

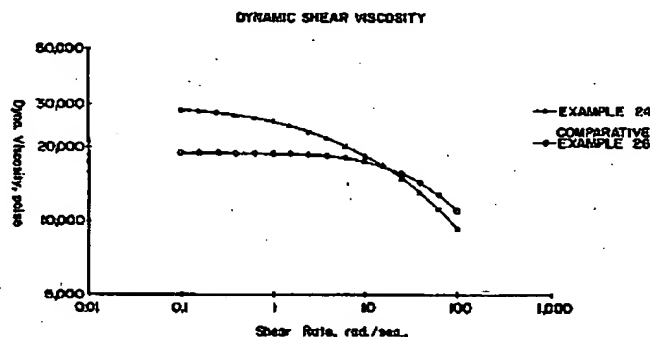
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## (54) Title: ELASTIC SUBSTANTIALLY LINEAR OLEFIN POLYMERS



## (57) Abstract

Elastic substantially linear olefin polymers are disclosed which have processability similar to highly branched low density polyethylene (LDPE), but the strength and toughness of linear low density polyethylene (LLDPE). The polymers have processing indices (PI's) less than or equal to 70 percent of those of a comparative linear olefin polymer and a critical shear rate at onset of surface melt fracture of at least 50 percent greater than the critical shear rate at the onset of surface melt fracture of a traditional linear olefin polymer at about the same  $I_2$  and  $M_w/M_n$ . The novel polymers can also have from 0.01 to 3 long chain branches/1000 carbons along the polymer backbone and have higher low/zero shear viscosity and lower high shear viscosity than comparative linear olefin polymers. The novel polymers can also be characterized as having a melt flow ratio,  $I_{10}/I_2 > 3.63$ , a molecular weight distribution,  $M_w/M_n$  defined by the equation:  $M_w/M_n < (I_{10}/I_2) - 4.63$ , and a critical shear stress at onset of gross melt fracture greater than  $4 \times 10^6$  dyne/cm<sup>2</sup>.